

# Test Report

Report Number: L15021

Date: Mar 16, 2015

Issued by:

Dialight Optics Laboratory  
1501 Route 34 South, Farmingdale, NJ 07727

Test of one Vigilant Highbay With Clear Acrylic Lens fixture  
Unit manufacturer: Dialight Corporation  
Unit model number: HE1EC4PN-xxx

Issued to:

Dialight Corporation  
1501 Route 34 South, Farmingdale, NJ 07727

**Tests performed:** Photometric characterization and temperature measurement per the described standards.

**Dates of test:** March 4, 2015 through March 10, 2015

**Standards used:** All tests are performed in accordance with procedures and guidelines prescribed by the American National Standards Institute (ANSI) or Illuminating Engineering Society of North America (IES):

- IES LM-79:2008: Electrical and Photometric Measurements of Solid-State Lighting Products
- ANSI/UL 1598:2008: Underwriters Laboratories Inc. Standard for Safety: Luminaires
- ENERGY STAR Manufacturer's Guide for Qualifying Solid State Lighting Luminaires Version 2.1

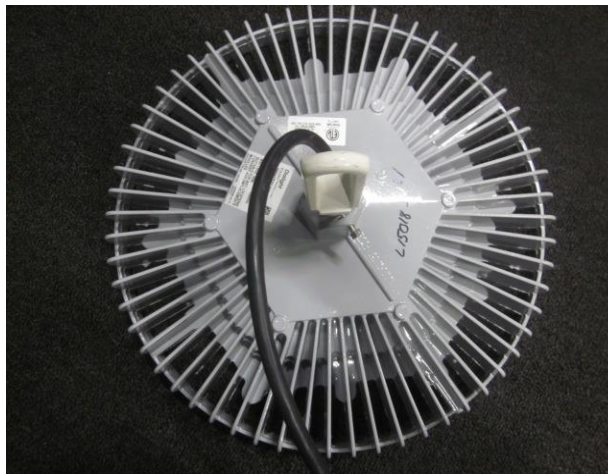
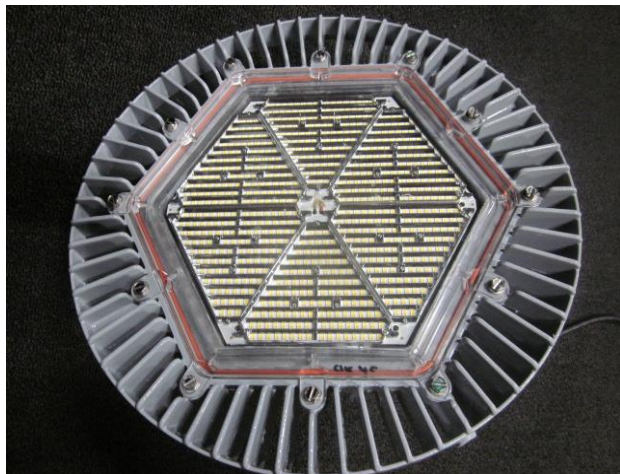
**Description of sample:**

Sample Number: L15021  
Manufacturer: Dialight Corporation  
Product Name: Vigilant Highbay  
Description: Vigilant Highbay With Clear Acrylic Lens  
Model Number: HE1EC4PN-xxx

## Report Summary

Sample number L15021  
Dialight unit model number HE1EC4PN-xxx

### Photograph(s) of sample:



\*Photographs not to scale. For reference only.

### Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	25050 (lumens)	24951 (lumens)
Electrical Power:	203.7 (W)	203.5 (W)
Luminous Efficacy:	123 (lumens/W)	122.6 (lumens/W)

### Electrical Measurements:

Input Power (120VAC): 203.7 (W)  
 Power Factor (120VAC): 0.997  
 Current ATHD % (120VAC): 6.437  
 Input Power (277VAC): 197.4 (W)  
 Power Factor (277VAC): 0.98  
 Current ATHD % (277VAC): 8.901

### Color Measurements:

Correlated Color Temperature (CCT): 4932  
 Color Rendering Index (CRI): 78.1  
 Chromaticity Coordinate (x): 0.347  
 Chromaticity Coordinate (y): 0.355  
 Chromaticity Coordinate (u'): 0.212  
 Chromaticity Coordinate (v'): 0.324  
 DUV: 0.00083

### Temperature Measurements:

In Situ LED Source Temperature: 58.9 (°C)

## Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15021.  
Dialight unit model number HE1EC4PN-xxx

### Test Conditions:

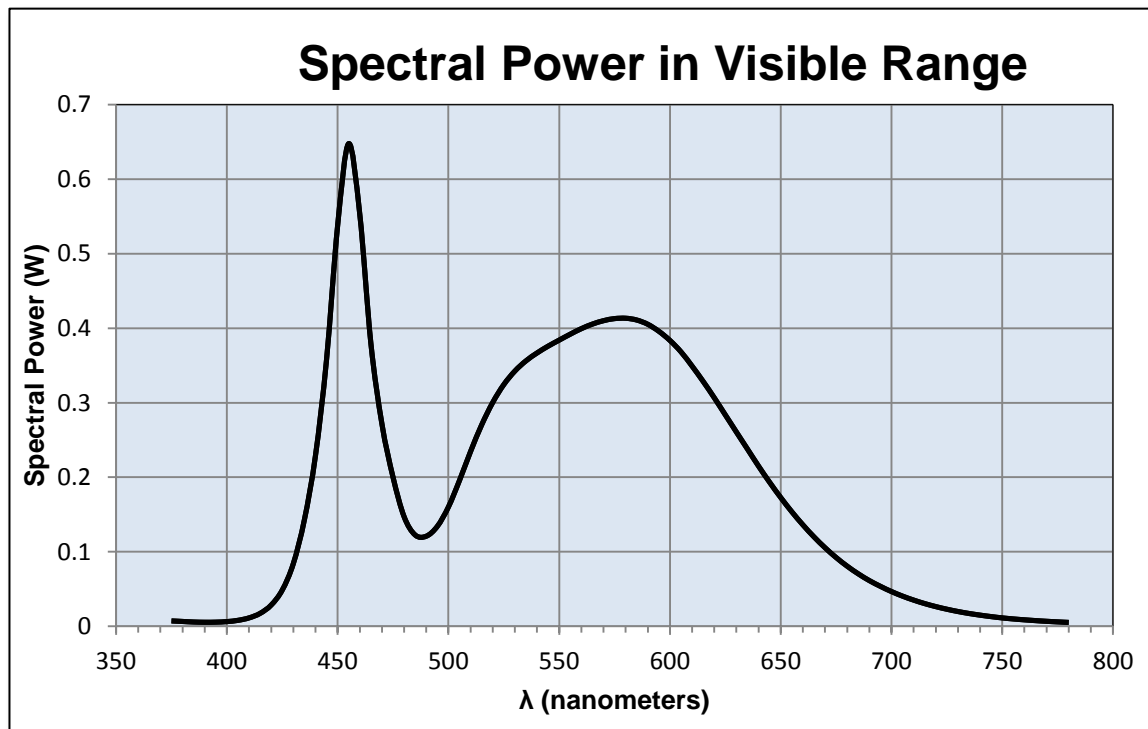
Ambient Temperature:  $25 \pm 1$  (°C)

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input Current: 1.7 (A)  
Input Power: 203.7 (W)  
Input Power Factor: 0.997  
Current ATHD: 6.437 (%)

### Photometric measurements:

Luminous Flux: 25050 (lumens)  
Luminous Efficacy: 123.0 (lumens/W)  
Correlated Color Temperature (CCT): 4932 (K)  
CRI -Ra: 78.1  
CRI -R9: -8.2  
DUV: 0.00083  
CIE Coordinate (x): 0.347  
CIE Coordinate (y): 0.355  
CIE Coordinate (u'): 0.212  
CIE Coordinate (v'): 0.324



## Test Results: Integrating Sphere

Results continued from previous page.

### Tabulated Spectral Power in Visible Range:

$\lambda(\text{nm})$	(W/nm)	$\lambda(\text{nm})$	(W/nm)	$\lambda(\text{nm})$	(W/nm)
375	0.007	515	0.27	655	0.154
380	0.006	520	0.3	660	0.136
385	0.006	525	0.324	665	0.12
390	0.005	530	0.342	670	0.105
395	0.006	535	0.356	675	0.092
400	0.006	540	0.367	680	0.081
405	0.008	545	0.376	685	0.07
410	0.011	550	0.384	690	0.061
415	0.017	555	0.392	695	0.054
420	0.029	560	0.399	700	0.047
425	0.049	565	0.405	705	0.04
430	0.084	570	0.41	710	0.035
435	0.143	575	0.413	715	0.03
440	0.229	580	0.413	720	0.026
445	0.358	585	0.411	725	0.023
450	0.538	590	0.405	730	0.02
455	0.648	595	0.396	735	0.017
460	0.553	600	0.384	740	0.015
465	0.38	605	0.368	745	0.013
470	0.271	610	0.349	750	0.011
475	0.2	615	0.329	755	0.01
480	0.147	620	0.307	760	0.009
485	0.122	625	0.284	765	0.008
490	0.121	630	0.261	770	0.007
495	0.134	635	0.238	775	0.006
500	0.16	640	0.215	780	0.005
505	0.196	645	0.193		
510	0.235	650	0.173		

## Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15021.  
Dialight unit model number HE1EC4PN-xxx

### Electrical Measurements:

Input Voltage: 120 (VAC)  
Input current: 1.702 (A)  
Input Power: 203.5 (W)  
Power Factor: 0.996

### Photometric measurements:

Absolute Luminous Flux: 24951 (lumens)  
Luminous Efficacy: 122.6 (lumens/W)

### Intensity Summary:

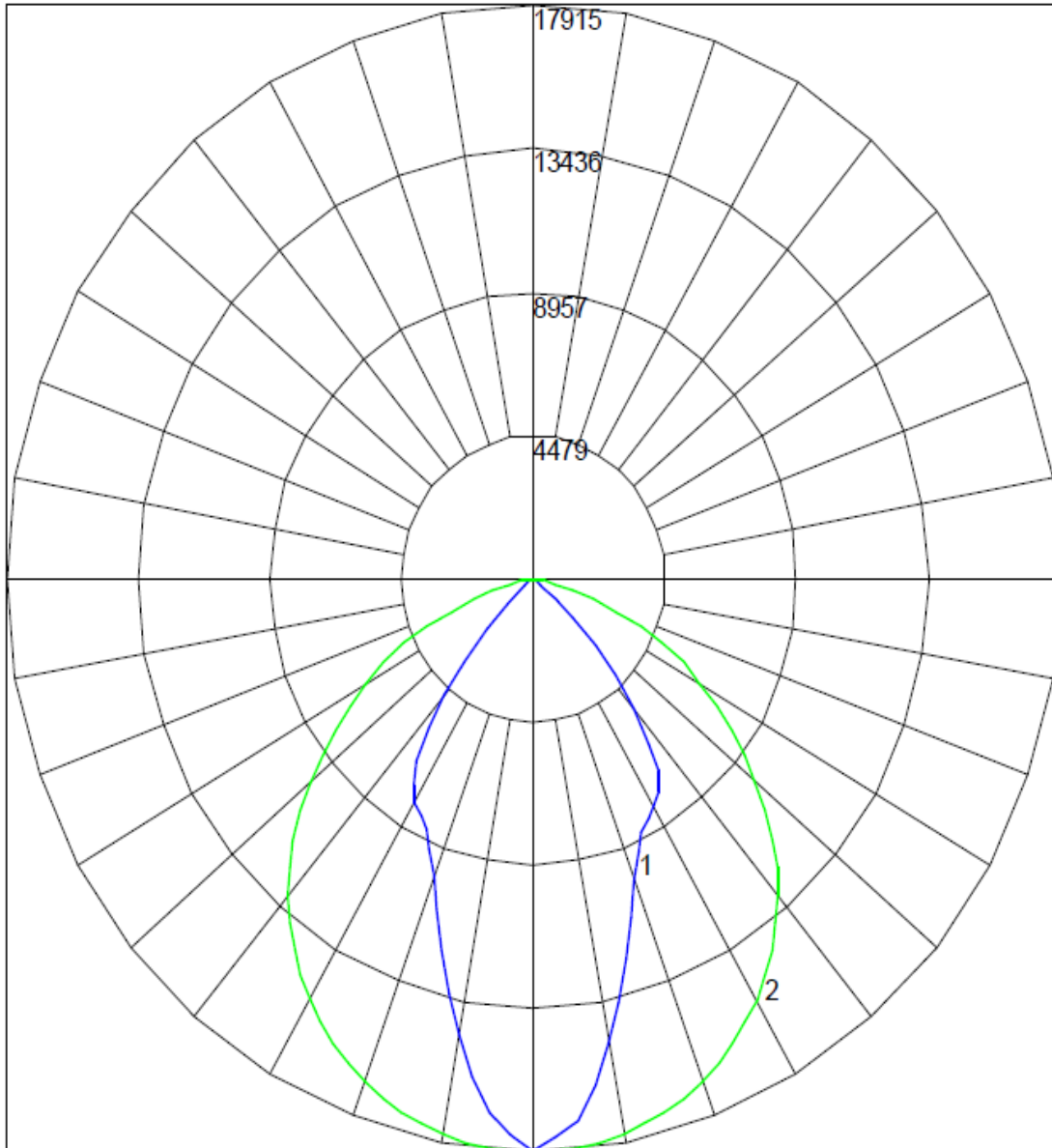
ANGLE	ALONG	<u>INTENSITY (CANDLEPOWER) SUMMARY</u>				OUTPUT LUMENS
		25	45	72.5	ACROSS	
0	17915	17915	17915	17915	17915	
5	16991	17090	17281	17596	17861	651
15	12307	12902	14206	16226	17307	3284
25	8774	9043	10273	13519	16069	4854
35	7384	7695	7837	10352	14162	5563
45	2950	4134	6203	7131	11540	5162
55	276	518	2261	4929	8268	3300
65	50	142	258	2275	4840	1604
75	25	39	42	85	1414	491
85	0	0	0	0	11	43
95	0	0	0	0	0	0
105	0	0	0	0	0	0
115	0	0	0	0	0	0
125	0	0	0	0	0	0
135	0	0	0	0	0	0
145	0	0	0	0	0	0
155	0	0	0	0	0	0
165	0	0	0	0	0	0
175	0	0	0	0	0	0
180	0	0	0	0	0	0

<u>ZONAL LUMEN AND PERCENTAGES</u>		
ZONE	LUMENS	% LUMINAIRE
0-30	11519.07	46.2%
0-40	17099.2	68.5%
0-60	23791.46	95.4%
60-90	1601	6.4%
0-90	24951.26	100.0%
90-180	0	0.0%
0-180	24951.26	100.0%

### Test Results: Goniometer

Results continued from previous page.

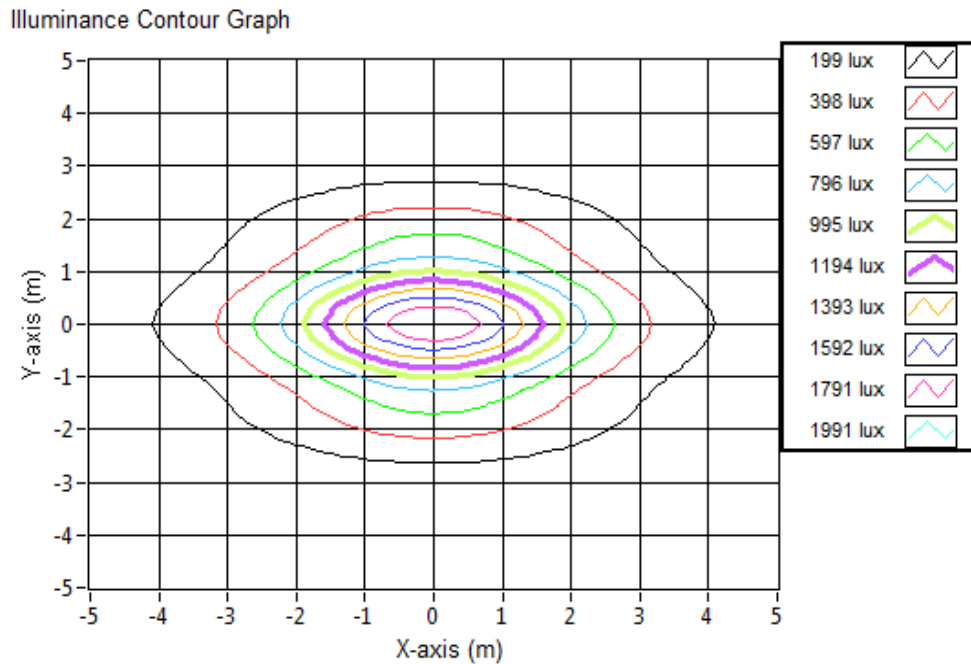
**Polar Plot:**



## Test Results: Goniometer

Results continued from previous page.

### Illuminance Plot:



### Illuminance-Cone of Light:

Mounting Height (m)	Beam Cone Width (m)	Orthogonal Beam Cone Width (m)	Projected Illuminance (lux)
3.048	2.70	8.05	1928.3
6.096	5.39	16.09	482.1
9.144	8.09	24.14	214.3
12.192	10.78	32.19	120.5
15.24	13.48	40.24	77.1
18.288	16.18	48.28	53.6
21.336	18.87	56.33	39.4
24.384	21.57	64.38	30.1
27.432	24.26	72.43	23.8
30.48	26.96	80.47	19.3

## Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15021.  
Dialight unit model number HE1EC4PN-xxx

LED identified as Nichia part number NT2W757DT.

LED drive current (as indicated by customer): 100 (mA)

### LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If): 300 (mA)  
Maximum Rated Power Dissipation: 1.05 (W)  
Maximum Junction Temp. (Tj): 120 (°C)  
Thermal Resistance (Rth): 18 (°C/W)

Derived Specifications:

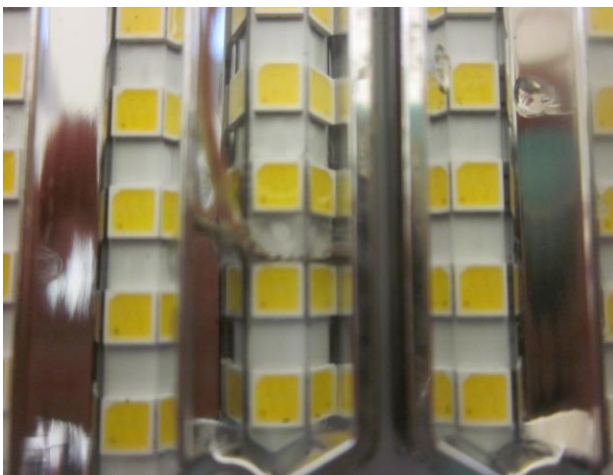
Maximum Power at Indicated Current: 0.35 (W)  
Maximum Source Temperature: 113.7 (°C)

### Test Conditions:

Temperature Measurement Location: See Photographs Below  
Ambient Temperature:  $25^{\circ} \pm 1^{\circ}$  (°C)  
Ambient temperature at time of measurement: 25.5 (°C)  
Relative humidity at time of measurement: 15%

### Results:

Measured LED source temperature: 58.9 (°C)





**Equipment Used:**

Equipment Name	Model Number
Omega TC	Dpi8
Fluke 8808A Digit Multimeter	8808A
YOKOGAWA Digital Power Meter	760401
LSI Standard Lamps	#30279
LSI High Speed Mirror Goniometer	6240T
Instrument System Spectrometer	CAS140B-151
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3
Instrument System 1.5 Meter Sphere	ISP1500
Volttech Power Analyzer	PM1000+
Delta Elektronika DC Power Supply	SM.300-5
Elgar AC Power Supply	CW1251P
Instek AC Power Supply	APS-9501
Sorensen DC Power Supply	XHR150-7
Extech Hygro-Thermometer	445703
Extech Hygro-Thermometer	445703
Fluke 52II Thermometer	52II Thermometer
Volttech Power Analyzer	PM1000+
Tenma AC Power Source	72-7675
BK Precision	1715A
TDK-Lambda	GEN1500W
Fluke 8808A Digit Multimeter	8808A
TPI Digital Thermometer 343	TPI 343
TPI Digital Thermometer 343	TPI 343
Step-Up Transformer	
Omega TC	Dpi8-C24
Agilent True RMS OLED Multimeter	U1273A

**Additional Notes:**

Samples are received and tested in new and undamaged condition, unless otherwise noted. The results shown in this report are representative only of the test samples submitted. This data has been issued to the assignee for further evaluation. This report shall not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. This report shall not be reproduced, except in full, without the express written permission of Dialight Optics Laboratory.

Test Report Issued By:

Richard Huegi  
 Dialight Optics Laboratory  
 Senior Optical Engineering Technician  
 Lighting Division

Test Report Reviewed and Approved By:

Vishnu Shastry  
 Dialight Optics Laboratory  
 Optical Engineer  
 Approved Signatory